

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): An O₂-sensor fault diagnosis apparatus comprising:
an O₂-sensor for detecting concentration of oxygen contained in an exhaust gas of an internal combustion engine;
a feedback control portion for controlling a quantity of fuel supplied to the internal combustion engine through feedback control according to an output signal of the O₂-sensor;
a state judging portion for judging whether the O₂-sensor is in an active state or in an inactive state on the basis of a voltage of the output signal of the O₂-sensor; and
a fault diagnosis portion for diagnosing whether the O₂-sensor has any fault on the basis of the voltage of the output signal of the O₂-sensor under a condition where it is judged that the O₂-sensor is in the inactive state, wherein fuel is not injected when the O₂-sensor is in the inactive state,

wherein said fault diagnosis portion includes an input resistance changing portion for changing an input resistance so as to cause a change in a level of the output signal of said O₂-sensor, and identifies a fault of said O₂-sensor on the basis of the change in the level of the output signal caused by changing the input resistance, and

wherein said fault diagnosis portion diagnoses whether said O₂-sensor has any fault by changing said input resistance each time said state judging portion judges that said O₂-sensor is in the inactive state.

2-3. (canceled).

4. (original): The O₂-sensor fault diagnosis apparatus according to Claim 1 further comprising an informing portion for sending a notice if said fault diagnosis portion diagnoses that said O₂-sensor has a fault.

5. (currently amended): An O₂-sensor fault diagnosis method comprising the steps of:

judging whether an O₂-sensor is in an active state or in an inactive state on the basis of a voltage of an output signal of the O₂-sensor; ~~and~~

diagnosing whether the O₂-sensor has any fault on the basis of the voltage of the output signal of the O₂-sensor under a condition where it is judged that the O₂-sensor is in the inactive state, wherein fuel is not injected when the O₂-sensor is in the inactive state; and

changing a level of the output signal of the O₂-sensor by changing an input resistance, wherein in said diagnosing step, a fault of the O₂-sensor is identified on the basis of a change in a level of the output signal of the O₂-sensor, and

wherein in said diagnosing step, it is diagnosed whether the O₂-sensor has any fault by changing said input resistance each time it is judged in the judging step that the O₂-sensor is in the inactive state.

6-7. (canceled).

8. (previously presented): The O₂-sensor fault diagnosis method according to Claim 5 further comprising an informing step for sending a notice if the O₂-sensor is diagnosed to have a fault in said diagnosing step.

9. (previously presented): The method according to claim 5, wherein the O₂-sensor is operable to detect a concentration of oxygen contained in an exhaust gas of an internal combustion engine.

10. (previously presented): The apparatus according to claim 2, wherein said fault diagnosis portion calculates a timing at which the input resistance is changed, and changes the input resistance for a predetermined period of time.